METHOD AND SYSTEM FOR VERIFYING MODEM STATUS

TECHNICAL FIELD

This invention relates to a method and system for verifying modem status for a telecommunication system and more particularly to verifying modem status in real-time of an internet subscriber service.

BACKGROUND ART

signal architectures, Line Digital Subscriber denoted as DSL, provide simultaneous voice and high-speed data services over a signal copper wire pair. DSL allows transmission at speeds much faster than the best available analog There exist several variations of DSL systems that use modems. copper wire cabling to move data between the site and the serving Data, voice and video are separated at the serving central office. Voice is delivered to the public switched telephone central office. network while data is delivered to the host destination over high speed service access links.

As and example, ADSL or Asymmetric Digital Subscriber Line services generally use existing unshielded twisted pair (UTP) copper wires from a telephone company's central office to the subscriber's premise, utilize electronic equipment in the form of ADSL modems at both the central office and the subscriber's premise, send high-speed digital signals up and down those copper wires, and send more information one way than the other. The

ADSL type of DSL services is capable of providing a downstream bandwidth of approximately 1.5 Mbps - 8 Mbps, and upstream bandwidth of about 16 Kbps - 64 Kbps with loop distances ranging DSL or High bit rate Digital from about 3.7 km - 5.5 km. Subscriber Line\services provide a symmetric, high performance connection over a\ shorter loop, and typically require two or three DSL is capable of providing both upstream copper twisted pairs and downstream bandwidth of approximately 1.5 Mbps, over loop DSL or single line digital distances of up to approximately 3.7 km. services provide a symmetric connection that matches DSL performance using a single twisted pair, but operating over a shorter loop of up to approximately 3.0 km.

typically implemented in asymmetric an are services DSL downstream transmission capability having a approximately 52 Mbps over twisted pair copper wire arranged in local loops of 300 m, 26 Mbps at 1,000 m, and 13 Mbps at 1,500 Upstream data rates in asymmetric implementations tend to m. range from approximately 1.6 Mbps to approximately 2.3 Mbps. As though skill in the art will recognize, a typical distribution system includes a central office equipped with a Host Digital Terminal (HOT) and arranged to operate as a hub between multiple Information Providers (VIPs)/Digital Service Providers Video In a Fiber-To-The-(DIPS) and customer residential dwellings. optic fiber (e.g. Neighborhood (FTN) type distribution system, OC-3c and OC-12c) lines are used to connect the central office to a Universal System Access Multiplexer (USAM), which is then connected to a Network Interface Device (NID) located on the customer property via twisted pair copper wire. A dedicated DSL an individual customer loop extends between the NID and residence using an existing POTS or telephone system twisted pair device, such as a residential wire, and a customer interface

gateway or set top box, provides a connection point for a customer display device such as a television or personal computer. A Fiber-To-The-Curb (FTTC) type distribution system is similar except that a Broadband Network Unit (BNU) is used in place of the USAM, and coaxial cable is used to connect the BNU, NID, and set top box.

The DSL signal format is used to carry signals to and from the customer. In these systems, the central office provisions each user for programming access rights, and maintains a profile database for each provisioned customer at the HOT to control the signals/channels that can be viewed by the customer.

are reducing access technology DSL improvements in The Improvements in access subscribers. increasing DSL costs and speed and ease of use are making DSL attractive for home, small Full time access or business and some large business users. connectivity has reduced call set-up time delay and eliminates DSL speeds may vary from getting "bumped" off the network. part time 256 Kps speeds to 7Mbps downstream/upstream for DSL's is Further improvements in intensive business users. communications connections on voice allowing high-speed digital Subscribers have the ability to continue making voice calls lines. while transmitting data, receiving files or working on the Internet.

Due to the improvements noted, more and more subscribers are connecting to the Internet via DSL connections. It has become important for Internet Service Providers (ISP's) to provide better and faster service. As the ISP is the connection from the subscriber to the Internet, the subscriber is reliant on the ISP for

any utilization of the Internet or network related service using service ideally wishes to limit downtime due The ISP DSL. Currently, the ISP is blind to a faulty connections to a minimum. If a connection issue occurs for any subscriber's connection status. reason, the customer is dependent upon the ISP to assist in initially may trouble The ISP troubleshooting the connection. shoot at the ISP end but is often required to phone the DSL service This phone request is very time consuming for and request status. the ISP as well as for the DSL service provider. Further, multiple requests for status are often difficult to satisfy the DSL for In some circumstances real time responses are very provider. difficult due to numerous status requests from multiple ISP's.

important current status is as subscriber connection New New subscribers often have multiple subscriber connection status. concerns that must be addressed for hardware and software related real-time proper DSL connections status. Having an accurate status of the DSL connection is very useful in subscriber new Consequently, a need has developed connection troubleshooting. for a method and system for verifying modem status.

DISCLOSURE OF INVENTION

It is the principal object of the present invention to provide a method and system for verifying modem connection via an internet website.

It is another object of the present invention to provide an ISP with the capability to check modem status in real-time via known website interface technology.

It is still another object of the present invention to provide an ISP with the capability to troubleshoot modem connections by allowing the ISP to independently verify customer connections at the DSLAM of the respective central office.

carrying out the above objects, there is provided a method modem status for an telecommunications verifying provider in a communications network serviced by a central office. internet interface and comprises connecting to an The method transmitting a modem status request to the internet interface. The modem status \request is transferred from the internet interface to a and subsequently transmitted an integrator whereby the integrator interprets the modem status request and retrieves corresponding aubscriber information. The corresponding the server and is transferred to information subscriber a central office request and eventually sent to converted to The \ request queries modem status of a customer central office. and creates a status signal which is transmitted back to the server. The server transmits the\ status signal from the server to the internet interface and converts the\ status signal to a readable format for the telecommunications service\ provider indicating status as "trained", "not trained" or "training".

In carrying out the above method, there is provided a system The system comprises a web that automates the above steps. server having an internet website interface for receiving a modem status request from the internet service provider via the internet, an integrator capable of retrieving subscriber location information and a status server connected to the web server for receiving modem status request and transmitting the request to the integrator whereby the integrator interprets the modem status request and retrieves corresponding subscriber location information. The integrator transmits the corresponding subscriber information to the status server and the status server thereby converts the corresponding subscriber information to a central office DSLAM request and sends the central office DSLAM request to the central The central office DSLAM responds to the office DSLAM. request and transmits a status signal to the status server and the status server transmits the signal to the webserver which converts the signal to a readable format on the internet website interface for viewing by the internet service provider.

These and other objects, features, and advantages of the present invention will become more readily apparent by reference to the following description of the drawings wherein like reference numerals correspond to like components.

BRIEF DESCRIPTION OF DRAWINGS

FIGURE 1 is a schematic diagram of the system for verifying modem status of the present invention;

FIGURE 2 is a flow diagram of the method for verifying modem status of the present invention;

FIGURE 3 is a representative web interface illustrating DSL subscribers; and

FIGURE 4 is a representative web interface illustrating modem status.

BEST MODE FOR CARRYING OUT THE INVENTION

reference to Fig. 1 of the drawings, there is shown a schematic of the system 10 of the present invention. generalized As discussed above, when an ISP 12, using a computer system 14 desires to check modem status, the ISP 12 connects to the Internet 16 via common Internet connections methods. The ISP connect up to the appropriate internet interface or internet web site having the appropriate Internet addresses previously by provided by the DSL service provider or by using appropriate The internet web site 18 is resident search techniques if hecessary. Any common web server such as the Apache on a web server 20. Group's Apache Web Server or Microsoft IIS is envisioned for the web server 20 system component.

communication with in connected and 20 is Web server Status server 22, in the preferred embodiment is a status server 22. UNIX inetd server that is capable of listening on a UNIX socket The status server 22 is (port 7895) on two production servers. connected and in communication with a database 24. The database preferred embodiment contains useful customer in the 24. As shown in FIGURE 1, status server 22 is capable information. of communicating with a DSLAM 26 at the central office 28. DSLAM 26 is in communication with the DSL modem 30 which is connected to the ultimate customer or subscriber 32.

in as described the preferred embodiment, method the In FIGURE 2, comprises using a digital broadband network serviced The ISP 12 connects to webserver 20 using by a central office 26. As shown in FIGURE 3. having an internet website interface 18. the website interface 18 includes a list 34 of telecommunications Each customer 36 service provider customers 36. In this manner the ISP can easily corresponding phone number 38. designate the appropriate customer 36 from the list 34. If a customer calls the ISP with trouble in connection, the ISP can begin the trouble shooting procedure by picking or designating In choosing 34 the appropriate customer. from the list customer from the list 34, the ISP has through the use of the website interface18 transmitted a modem status request 40 to the webserver 20 via the website interface 18.

The webserver 20 transfers the modern status request 40 from the webserver 20 to a status server 22. As discussed above, status server, in the preferred embodiment is a UNIX inetd the The status server 22 handles multiple simultaneous The modem status request 40, now in the requests in real time. form of a telephone number 38 is transmitted from the status server The time and the first and the

22 to an integrator 24. The status server does what is known in the art as SQL to the integrator 24. The integrator 24 interprets the modem status request 40 in the form of phone number 38 and retrieves corresponding subscriber location information 42. This subscriber location information 42 may be in the form of customer node and port records for which the DSLAM 28 the customer 12 is provisioned on. The integrator 24 transits the customer node and port records or corresponding subscriber location information 42 to the status server 22.

The status server converts the corresponding subscriber location information 42 to a central office DSLAM request 44. In the art, the central office DSLAM request 44 is also known as a SNMP request. This central office DLSAM request 44 is sent to the corresponding central office DSLAM 28. This request queries the modem status of a customer the DSLAM creates a status signal. This status signal 46 is related to the status of the modem and is "connected", "not connected" or "connecting" or also known as "trained", "not trained" or "training". Status signal 46 is transmitted to status server 22. Status server 22 transits the status signal 46 from the status server 46 to the web server 20 all in real time.

The webserver 20 converts the status signal 46 to a website interface 18a, as shown in FIGURE 4 which is in a readable format. More specifically, the status of "trained", "not trained" or "training" is viewable in a graphical and textual format which is easily readable by the ISP. This real time information greatly enhances the ISP trouble shooting and set-up capabilities for use with the customer.

While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention.